

REMARKS

Claims 1-8 remain in the application. Claims 6-8 have been amended to correct antecedent basis and grammatical type issues, and no change in the scope of the amended claims is effected by this amendment.

The invention is directed to modifying the surface of a polymer using rotational ultrasonic treatment. In one embodiment, the modified surface enables rubber, waste rubber, and plastics to be recycled more easily. U.S. Patent 5,538,191 to Holl, by contrast, is directed to device designed to produce a more complete uniform dispersion and wetting of solid powdered material entrained in a slurry, together with desired highly uniform milling and deagglomeration (see column 15, lines 28-39.

Thus, at the outset, it should be understood that the present invention is focused on a chemical modification of the polymer powder, especially S-S bonds in the polymer powder, while that of the Holl reference is concerned with a change of physical properties, such as the size of particulates via mixing and milling treatment. The ultrasonic oscillator according to the present invention is employed for creating a chemical modification to the treated powder, while the ultrasonic oscillators in the Holl reference supplementarily serve to cause elastohydrodynamic pressure and viscosity increase, and/or production of smaller sub-Kolmogoroff eddies.

Claims 1-8 were rejected a being obvious over Holl. This rejection is traversed.

The Examiner has relied on Figures 7 and 9 of Holl as showing, what the Examiner has characterized as key features of the claimed invention, and has taken the other limitations recited in the claim would be obvious design choices. The undersigned does not concede that the features recited in the claim are an obvious design choice, and requests strict proof of the same, or that the position taken by the Examiner simply be withdrawn.

However, and more importantly, it is noted that the device shown in Holl has a fundamentally different configuration than the claimed invention. In particular, in both Figures 7 and 9, the transducers 52 are located on the same side

of the plat where discharge occurs (note the arrow going into pipe 68 at the bottom of Figure 7 relative to the position of the transducers 52, and the arrow going into the pipe at the right of Figure 9 relative to the position of the transducers. These transducers are positioned such that they cyclically vary the passage thickness between the two plates (see column 6, lines 2-10). As can be seen from Figures 9 and 10 of Holl, there is a high sheer created in the gap region by the two plates, and driving the sloped plate up and down with the transducers is part of the mechanism for creating the sheer.

In sharp contrast, claim 1 of the present invention requires that the ultrasonic vibrator is positioned at the bottom of the rotating disk with a gap, and modifies the polymer powder fed by the shaft using ultrasonic wave. An exemplary embodiment is shown in Figure 4 of the application where the ultrasonic vibrator 5 is below the discharge port and upper rotating disk 4 with the downward slope. As such, the claimed invention has a configuration of ultrasonic vibrator to rotating disk that is completely opposite in configuration from Holl, and would not be obvious to one of ordinary skill in the art over Holl (particularly since Holl is directed to a very different technology area).

Further, compared with the present invention in terms of a structure, the Holl reference is not provided with a means for adjusting the gap between the rotating disk and the surface of the ultrasonic oscillator (as noted above, Holl does not show an ultrasonic vibrator spaced away from a rotating disk), which is essential to control the modification degree and quantity of polymer powder as is recited in method claim 7 of the present application.

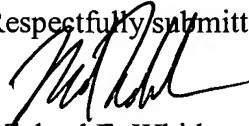
In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1-8 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any

fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael E. Whitham', is written over the typed name.

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